

## IN THE CLAIMS

1           1. [currently amended] A method ~~(400, 500, 600, 700)~~ for synchronizing state  
2 information in a security gateway cluster, said security gateway cluster comprising at  
3 least two nodes, said method comprising the step of:

4                 - storing state information in a first node and in at least a second node of  
5 said at least two nodes in said security gateway cluster;

6                 - upon occurrence of a predetermined irregularly occurring action,  
7 synchronizing ~~(403)~~ said state information in said security gateway cluster by  
8 sending state information from ~~a~~ said first node to at least said second node of  
9 said at least two nodes,

10 ~~characterized in that it comprises the steps of:~~

11                 - detecting ~~(401)~~ in said security gateway cluster a predetermined  
12 irregularly occurring action, and

13                 - initiating ~~(402)~~ said step of synchronization of state information as a  
14 response to said predetermined irregularly occurring action;

15 ~~and in that in said step of synchronizing state information, state information is~~  
16 ~~sent to at least a second node of said at least two nodes.~~

1           2. [currently amended] A method according to claim 1, ~~characterized in that~~  
2 wherein said predetermined action is modification of state information (602) stored in said  
3 first node.

1           3. [currently amended] A method according to claim 2, ~~characterized in that~~  
2 wherein in the said step of synchronizing state information, only a modified part of said  
3 ~~the~~ state information stored in said first node is sent.

1           4. [currently amended] A method according to claim 3, ~~characterized in that~~  
2 wherein the modified part of the state information is sent from said first node to all other  
3 nodes of said security gateway cluster.

1           5. [currently amended] A method according to claim 4, ~~characterized in that~~  
2 wherein the modified part of the state information relates to a certain protocol,

3 authentication information, virtual private network parameters or intrusion detection  
4 system.

1 6. [currently amended] A method according to claim 1, ~~characterized in that~~  
2 wherein in the step of synchronizing state information, all state information stored in said  
3 first node is sent.

1 7. [currently amended] A method ~~(500)~~ according to claim 1, ~~characterized in that~~  
2 ~~that wherein~~ it further comprises the step of:  
3 - periodically synchronizing ~~(501, 403)~~ state information from said first node to at least a  
4 second node.

1 8. [currently amended] A method ~~(600)~~ according to claim 1, ~~characterized in that~~  
2 ~~it further comprising comprises~~ the step of:  
3 - defining ~~(601)~~ for each node belonging to said security gateway cluster  
4 a node-specific backup group comprising at least one node-specific backup node,  
5 and in that when a node initiates synchronizing of state information, state  
6 information is sent ~~(605)~~ at least to nodes belonging to a respective node-specific  
7 backup group.

1 9. [currently amended] A method according to claim 8, ~~characterized in that~~  
2 wherein  
3 - state information stored in said first node comprises common state  
4 information and node-specific state information,  
5 - modification of common state information initiates synchronization ~~(604)~~  
6 of common state information to all other nodes of said security gateway cluster,  
7 and  
8 - modification of node-specific state information initiates synchronization  
9 ~~(605)~~ of node-specific state information to nodes belonging to backup group of  
10 said first node.

1 10. [currently amended] A method according to claim 9, ~~characterized in that~~  
2 wherein said predetermined irregularly occurring action affects number of nodes in said

3 security gateway cluster ~~and in that~~ said method further comprising ~~comprises~~ the step  
4 of:

5 - redefining ~~(703)~~ for at least one node belonging to said security gateway  
6 cluster a backup group comprising at least one backup node.

1 11. [currently amended] A method ~~(700)~~ according to claim 1, ~~characterized in~~  
2 ~~that wherein~~ said predetermined irregularly occurring action is said first node failing  
3 ~~(701)~~ to continue normal operation.

1 12. [currently amended] A method according to claim 1, ~~characterized in that~~  
2 wherein said predetermined irregularly occurring action is said second node requesting  
3 ~~(704)~~ for state information.

1 13. [currently amended] A method according to claim 1, ~~characterized in that~~  
2 wherein said predetermined irregularly occurring action is said first node initiating a  
3 transition to offline state.

1 14. [currently amended] A method according to claim 1, ~~characterized in that~~  
2 wherein said predetermined irregularly occurring action is handling of data packets  
3 relating to a communication session in at least two nodes, one of them being said first  
4 node, and in that said synchronization of state information is performed between at least  
5 said at least two nodes.

1 15. [currently amended] A method ~~(800)~~ according to claim 1, ~~characterized in~~  
2 ~~that wherein~~ said predetermined irregularly occurring action is a receipt ~~(801)~~ of a data  
3 packet in said first node of said security gateway cluster, said data packet relating to a  
4 command to open a new connection via said security gateway cluster.

1 16. [currently amended] A method according to claim 15, ~~characterized in that it~~  
2 further comprising ~~comprises~~ the step of:  
3 - delaying ~~(803)~~ sending of said data packet from said first node until said  
4 synchronization of state information is performed.

1           17. [currently amended] A method according to claim 1, ~~characterized in that it~~  
2 ~~further comprises~~ further comprising the step of:  
3           - delaying sending of a plurality of data packets from said first node until said  
4           synchronization of state information is performed.

1           18. [currently amended] ~~A computer program comprising program code for~~  
2 ~~performing all the steps of Claim 1 when said program is run on a computer. A method~~  
3 ~~according to claim 1 wherein said irregularly occurring action is the failure of a node, and~~  
4 ~~wherein said step of storing state information in said first node comprises storing both~~  
5 ~~common state information and node-specific state information in said first node, and~~  
6 ~~further comprising the steps of:~~  
7           - defining one or more backup nodes for said first node in a security gateway  
8 cluster;  
9           - upon detection of failure of said first node, initiating state information  
10 synchronization and synchronizing said common state information with all other  
11 nodes in said security gateway cluster and synchronizing node-specific state  
12 information of said first node with said one or more backup nodes for said first  
13 node.

1           19. [currently] ~~A computer program product comprising program code means~~  
2 ~~stored on a computer readable medium for performing the method of Claim 1 when said~~  
3 ~~program product is run on a computer. A computer-readable medium having stored~~  
4 ~~thereon computer-readable instructions, which when executed by a computer control~~  
5 ~~said computer to perform the following process:~~  
6           - storing state information in a first node and in at least a second node of  
7 said at least two nodes in said security gateway cluster;  
8           - detecting said security gateway cluster a predetermined irregularly  
9 occurring action, and

1 0                    - initiating said step of synchronization of state information as a response  
1 1                    to said predetermined irregularly occurring action,  
1 2                    - synchronizingsaid state information in said security gateway cluster by  
1 3                    sending state information from said first node to at least said second node of said  
1 4                    at least two nodes.

1                    20. [currently amended] A first ~~software entity (910) for a node (900)~~ in a  
2                    security gateway cluster, said first node ~~first software entity~~ comprising:  
3                    a processor programmed with the following software components:  
4                           - program code means ~~(911)~~ for processing data packets,  
5                           - program code means ~~(912)~~ for storing state information of said node,  
6                    and  
7                           - program code means ~~(914)~~ for synchronizing said state information with  
8                    at least a second ~~first software entity in~~ controlling operations of a processor in a  
9                    secnd ~~one other~~ node of said security gateway cluster,  
10                    ~~characterized in that said first software entity further comprises~~  
11                           - program code means ~~(915)~~ for receiving from said second software  
12                    entity instructions to initiate synchronizing said state information,  
13                    and wherein ~~in that~~ said program code means ~~(914)~~ for synchronizing said state  
14                    information are arranged to initiate synchronization as a response to receipt of  
15                    instructions to initiate synchronization.

1           21. [currently amended] A first ~~node software entity~~ according to claim 20, ~~cha-~~  
2 ~~racterized in that it further comprising: comprises~~  
3           - program code means (916) for causing a data packet to be delayed until  
4           an initiated state information synchronization is complete.

1           22. [currently amended] A first ~~node software entity~~ according to claim 21, ~~cha-~~  
2 ~~racterized in that wherein~~ said program code means (916) for causing a data packet to  
3           be delayed are arranged to delay said data packet until state information is transferred  
4           from said first node to said second node.

1           23. [currently amended] A first ~~node software entity~~ according to claim 21, ~~cha-~~  
2 ~~racterized in that wherein~~ said program code means (916) for causing a data packet to  
3           be delayed are arranged to inform said ~~the~~ second software entity when an initiated  
4           state information synchronization is complete.

1           24. [currently amended] A first ~~node software entity~~ according to claim 20, ~~cha-~~  
2 ~~racterized in that it further comprising: comprises~~  
3           - program code means (913) for receiving instructions to modify said state  
4           information from a second software entity residing in a same node as said first  
5           software entity.

1           25. [currently amended] A second ~~software entity (920) for a node in a security~~

2 gateway cluster, said second ~~node software entity~~ comprising:  
3 a processor programmed with the following software components:  
4 - program code means ~~(924)~~ for monitoring data packets relating to certain  
5 communication protocol connections,  
6 ~~characterized in that it further comprises~~  
7 - program code means ~~(923)~~ for delivering to a first node in said security  
8 gateway cluster ~~software entity~~ instructions to initiate synchronizing ~~said~~ state  
9 information between said first and second nodes.

1 26. [currently amended] A second ~~node software entity~~ according to claim 25,  
2 ~~characterized in that it further comprising: comprises~~  
3 - program code means (924) for causing a data packet to be delayed until  
4 an initiated state information synchronization is complete.

1 27. [currently amended] A second ~~node software entity~~ according to claim 26,  
2 ~~characterized in that wherein~~ said program code means ~~(924)~~ for causing a data  
3 packet to be delayed are arranged to inform said ~~the first node software entity~~ to delay a  
4 data packet.

1 28. [currently amended] A second ~~node software entity~~ according to claim 26,  
2 ~~characterized in that wherein~~ said program code means ~~(924)~~ for causing a data  
3 packet to be delayed are arranged to be informed by said ~~the first node software entity~~,

4 when an initiated state information synchronization is complete, and subsequently trigger  
5 delivery of said data packet to said the first node software entity.

1 29. [currently amended] A second node software entity according to claim 25,  
2 **characterized in that it further comprising: comprises**

3 - program code means ~~(922)~~ for delivering to said first node a first  
4 ~~software entity~~ instructions to modify state information comprising information  
5 about connections.

6  
7 30. [currently amended] A node ~~(900)~~ of a security gateway cluster comprising

8 - means ~~(934)~~ for storing state information of said node, and  
9 - means ~~(932)~~ for upon occurrence of an irregularly occurring action.

10 synchronizing said state information with at least one other node of said security  
11 gateway cluster,

12 **characterized in that it further comprises**

13 - means ~~(933)~~ for detecting a predetermined irregularly occurring action,

14 and

15 - means ~~(934)~~ for initiating synchronization of said state information as a  
16 response to said irregularly occurring action.

1 31. [currently amended] A security gateway cluster ~~(950)~~ having a plurality of  
2 nodes ~~(900a, 900b)~~, at least one node comprising



3 - means (934) for storing state information of said node, and  
4 - means upon occurrence of an irregularly occurring action, (932) for  
5 synchronizing said state information with at least one other node of said security  
6 gateway cluster,  
7 ~~characterized in that said at least one node further comprises~~  
8 - means (933) for detecting a predetermined irregularly occurring action,  
9 and  
10 - means (934) for initiating synchronization of said state information as a  
11 response to said action.

1 32. [currently amended] A security gateway cluster (950) according to claim 31,  
2 ~~characterized in that it further comprising: comprises~~  
3 - means (954) for defining for said at least one node a node-specific  
4 backup group by selecting at least one node-specific backup node,  
5 and ~~in that~~ wherein said means (932) for synchronizing said state  
6 information with at least one other node of the security gateway cluster are  
7 arranged to synchronize said state information from said at least one node to  
8 respective node-specific backup group.